

# Logan Cudia

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## EDUCATION

### University of Illinois Urbana-Champaign

*Expected Graduation: May 2025*

*Bachelor of Science in Computer Engineering*

*GPA: 3.30*

**Relevant Coursework:** *Computer Organization and Design, Computer Systems Engineering, Digital Systems Laboratory, Data Structures and Algorithms, IoT and Cognitive Computing, Applied Parallel Programming*

## EXPERIENCE

### Northrop Grumman

*May 2023 – Aug 2023*

*Hardware Electronics Engineer Intern*

- Verified voltage sequencing for a missile detection interface CCA to fit military standard sequence timing
- Supported design and verification process of a linear amplifier converter for small motor control
- Performed plot testing on a highspeed optical transceiver module to show degree of signal power loss
- Assisted creating Interface Control Documents (ICD) and Material Workbooks for various programs

### Illini EV Concept

*Aug 2022 – Feb 2023*

*Embedded Software Engineer*

- Pioneered the team's first Tachometer PCB with a STM32 microcontroller, IR sensor, and CAN transceiver to track the RPM of the wheels
- Utilized C++ to detect a triggered pulse, calculate the RPM, and send to display module via CANBus
- Aided electrical and mechanical team to integrate PCB into the car's infotainment system

## PROJECTS

### Linux-Like Operating System

*Oct 2023 – Dec 2023*

- Developed a 32-bit Linux-based kernel using C & x86 Assembly, incorporating advanced features like memory-mapping, paging, virtualization, and hardware interrupts
- Implemented a Round-Robin scheduler supporting three terminals and up to 10 concurrent processes, with emphasis on system calls, kernel privileges, and software context switching
- Authored device drivers for keyboard, mouse, and real-time clock while creating an interactive user shell

### UIUC Adventure with Tux Controller

*Sept 2023 – Oct 2023*

- Upgraded a UIUC campus adventure game with additional graphical features and a serial port Tux device
- Modeled a multithreaded program using a Posix mutex to handle game logic and synchronize keyboard and a customized made tux controller device
- Organized memory-mapped virtual memory to physical memory for VGA display

### Text-Mode Missile Command

*Aug 2023 – Sept 2023*

- Created a text mode version of classic arcade video game, Missile Command, in x86 assembly and extended to the Linux real-time clock (RTC) driver
- Designed a kernel tasklet that updates the game and missiles in real time on each RTC interrupt
- Interfaced 5 ioctl functions to manage Kernel/User interactions and communications

### IoT Security System

*Apr 2023 - May 2023*

- Designed an IoT security network using AWS IoT core and MQTT between Raspberry Pi's, mobile devices, and Nvidia Jetson Nano
- Implemented facial recognition and object detection models using Inception ResNet and EfficientNet architectures on Raspberry Pi network
- Accelerated identity verification by cross-referencing detected identities with an AWS SQL server database

## SKILLS/INTERESTS

- **Frameworks/Libraries:** TensorFlow, TFLite, OpenCV, NumPy, SciPy, Keras, React
- **Languages:** C++, C, SystemVerilog, Verilog, Python, x86 Assembly, CUDA, HTML, CSS, JavaScript
- **Technologies:** Docker, Git, Raspberry Pi, Linux Systems, Cadence Design Systems, LTSpice, GDB
- **Interests:** Computer Architecture, Networking, Distributed Systems, HPC, AI/ML, Embedded Systems
- **Hobbies:** Basketball, Powerlifting, Formula 1 Racing, Traveling, Violin, Cooking